

Name _____

Math 1

Quiz 10

For all problems, show all work. Do not round unless instructed otherwise. You may use a graphing calculator. Good luck! ☺

For the first four problems, refer to the following information:

Bela will ride a Ferris wheel for exactly ten revolutions. The lowest point of the Ferris wheel is five feet above the ground. The highest point of the Ferris wheel is sixty-five feet above the ground. It takes the Ferris wheel twenty seconds to complete a revolution. Bela gets on the Ferris wheel when it is at its lowest point.

1. (5B, 5C) Draw a graph of Bela's distance from the ground as a function of time. (A correct graph is smooth: no "pointy points".) Define the independent and dependent variables (including units) and label them on your graph.
2. (5A, 5C) Use your graph to estimate how far above the ground Bela will be when she has been on the Ferris wheel for exactly fifty seconds.
3. (5A) Determine a suitable domain and range for this function.
4. (5A) Does the graph have any extrema? If so, state the y coordinate(s) at which the extrema occur. If not, explain why not.

5. (C3, 5A, 5D) Can a function have a domain that consists of infinitely many numbers and a range that consists of finitely many numbers? If so, provide an example of such a function. If not, explain why not.

6. (C3, 5A, 5D) Can a function have a domain that consists of finitely many numbers and a range that consists of infinitely many numbers? If so, provide an example of such a function. If not, explain why not.

7. (5F) Determine an explicit form for the function g with the properties that $g(1) = 11$ and $g(n+1) = 3g(n)$ for all valid values of n .

8. (5A) For the function g from the previous problem, describe its range if we stipulate that its domain is \mathbb{R} . How would the range be different if we stipulate that the domain is \mathbb{N} instead?